CHAPTER 11

The Trader's Mind

If you open yourself to insight, you are at one with insight and you can use it completely.

If you open yourself to loss, you are at one with loss and you can accept it completely.

—Daodejing (ca. 6 BCE)

At one point or another, everyone who has interactions with the market asks oneself, "Why is trading so hard?" There are legitimate reasons why trading *should* be difficult: markets are highly random; whatever edge we can find is eroded by competition from smart, well-capitalized traders; some traders work within various constraints; and markets are subject to very large shocks that can have devastating effects on unprepared traders. Even so, it seems like something else is going on, almost like we are our own worst enemies at times. What is it about markets that encourages people to do exactly the wrong thing at the wrong time, and why do many of the behaviors that serve us so well in other situations actually work against us in the market?

Part of the answer lies in the nature of the market itself. What we call "the market" is actually the end result of the interactions of thousands of traders across the gamut of size, holding period, and intent. Each trader is constantly trying to gain an advantage over the others; market behavior is the sum of all of this activity, reflecting both the rational analysis and the psychological reactions of all participants. This creates an environment that has basically evolved to encourage individual traders to make mistakes. That is an important point—*the market is essentially designed to cause traders to do the wrong thing at the wrong time*. The market turns our cognitive tools and psychological quirks against us, making us our own enemy in the marketplace. It is not so much that the market is against us; it is that the market sets us against ourselves.

These issues are particularly relevant to the individual, self-directed trader who has few limits placed on his or her behavior and is faced with the nebulous job description

of "making money." Traders in institutional settings have many advantages over the individual, not the least of which is that the institutional framework places many restrictions on their actions. These constraints, along with guidance from management and implicit mentoring from senior traders, provide a strong framework for shaping behavior and make new traders in these settings less vulnerable to some of the common psychological stresses and errors. Furthermore, many institutional traders have specific, clearly defined roles such as executing and managing complex sets of hedges, or managing inventory and flow resulting from customer orders. These traders are not faced with the broad task of beating the market and can become quite skilled at their jobs without fully conquering all of the psychological challenges of trading.

One word of warning: Though we now turn our focus to psychological elements of trading, positive thinking, meditation, visualization, and correct psychology can take you only so far. You absolutely *must* have an edge in the market to make money. For most styles of trading, it is impossible to apply that edge well without the proper psychological skills, but those psychological tools are not, by themselves, an actual trading edge. This chapter begins with a look at how the market turns some of our reasoning ability against us and how we become our own worst enemies in the market. Next, we look at intuition and flow, which are essential components of top-level trading for many traders. In particular, the flow experience is an important part of both performance and skill development. The chapter ends with some concrete suggestions for developing an environment that allows the developing trader to work to overcome some of the more common psychological errors.

PSYCHOLOGICAL CHALLENGES OF THE MARKETPLACE

The psychological demands of trading are almost unique in the human experience. First, there are serious consequences for making errors; trading decisions are high-risk decisions. Even if losses are limited so that no one trade can hurt us badly, it is a rare trader who can face 10 losses in a row without significant pain and suffering—even traders with secure institutional jobs may be in trouble after a string of losses. Furthermore, losses do not always result from bad decisions, and, even more ominously, bad decisions sometimes lead to good outcomes. This is a reflection of the randomness in the market environment, but it is very difficult to hone skills and to develop intuition when results cannot always be clearly tied to actions.

Furthermore, every trading decision you will ever make is *always* made with insufficient information. We never know everything there is to know about any trade, and, no matter how good our research is, there are many things that are simply unknowable. Even if you somehow could accumulate every relevant piece of information, known and unknown, there is always the possibility that a large order could be dumped into the market with unpredictable results—anything can happen in the market. In addition, many

trading decisions must be made quickly and under pressure. There are certainly types of trading for which this is less true, but the actual decision to do *something* always comes down to one point in time. Someone has to pull the trigger, and risk management decisions sometimes have to be made on the fly in response to developing market action. This is the trading environment—high-risk decisions, made under pressure with insufficient information. Seen in this light, the reasons for some of the psychological challenges become clearer.

EVOLUTIONARY ADAPTATIONS

Many of the cognitive tools we possess may be relics from earlier times in our development as a species; though they might have been helpful in prehistory, they often fail us completely in modern life. For instance, the adrenaline flood associated with the fight-or-flight response might have been useful in fleeing from a saber-toothed tiger. It is easy to see how natural selection might have strengthened this response: If there were early humans who didn't have it, they became lunch. In modern life, this same response leads to road rage, bar fights, constant stress, and a whole list of endocrine-related diseases. This is who we are as a species. It is not possible to be completely free from these quirks, because they are part of the very fabric of our being; we are, and always will be, vulnerable to making certain kinds of mistakes in certain situations. The best we can do is to be aware of these biases and errors and to attempt to counteract them; but be clear on this point—you cannot *fix* them.

Perceiving Patterns in Randomness

Have you ever seen faces in clouds, or shapes in the wood grain of finished furniture? Ever heard voices murmuring, just out of the range of perception, when you hold a seashell up to your ear? These are universal experiences, and they most likely come from a slight misfiring of some powerful cognitive machinery. For instance, processing and recognizing faces is actually an extremely complex task, but nearly all humans can do this naturally and instantaneously. There are specific areas of the brain that have evolved to deal with this complex task, but the same areas of the brain will also take random patterns in clouds and force them into the structure of human faces. From an evolutionary perspective, there was no payoff for being able to properly process random data, no reason that natural selection would have preserved this skill. Instead, humans who could quickly process faces and manage social interactions with their peers were probably far more likely to survive in prehistory than were early humans who did not excel at these skills.

We are pattern recognition machines. Our brains are so good at recognizing patterns that they will readily create patterns where none exist. We attempt to make order out of chaos by imposing structured patterns on randomness. Traders often do not fully

appreciate this fact—they do not understand that much of what they see in the market, no matter how convincing the pattern looks and feels, could simply be due to random fluctuations in the market. It is impossible to overestimate the seriousness of this bias.

Heuristics

A heuristic is a rule of thumb, a cognitive shortcut that can quickly find the answer to a problem that might otherwise be intractable. They are extremely fast and efficient; there are some problems that can be solved in seconds or minutes heuristically that would require hours or days of rational analysis. The root of heuristic thinking is the ability to relate new experiences to old, already processed information—"Oh, this looks like that." We learn, think, and deal with the outside world by generalizing and filing our experiences into broad categories, and when new situations are encountered we relate them back to these broad categories. In the market, we are likely to relate situations and patterns to groups of patterns that we have previously created or noticed, whether or not there is a valid link between the two sets.

Heuristics are useful or even essential for traders, but it is important that they are built from valid information and are carefully trained. Left unchecked, incorrect heuristics can be created and reinforced in the highly random market environment. For instance, one trader might have a heuristic that leads him to pay breakouts of the previous day's high in stock index futures, because he can remember many examples of good winning trades. Another trader, who has actually done the research, might have the correct heuristic, which in this case, would be to fade those highs. Both traders can make a trading decision quickly, but the trader whose intuition is based on correct principles of market behavior will make the *right* decision.

Shifting Blame

If you spend any time at all around traders, you will hear language like this: "Oh, *they* got my stop again." "That guy screwed me again. Can you believe that?" "Oh, *they* always do that. That's criminal! How can *they* always do this to me?" Traders tend to blame their losses on some great, nefarious, unseen *them* that is manipulating the markets behind the scenes—the U.S. government buying stock futures (the "Plunge Protection Team"), the floor traders manipulating markets, high-frequency trading (HFT) algorithms stealing from traders, or big banks heedlessly pushing markets around. Some or all of these things may happen, but here is the point: it doesn't matter. You would perceive this intentionality in the market whether it exists or not. You would feel a great unseen *them*, because of the way your brain is wired. *They* may or may not be real, but your perception of a third party manipulating the market says much more about your own cognition than about the market itself.

Markets are blatantly manipulated at times, of this there is no doubt. However, market action is the end result of the competing activity of tens of thousands of traders,

across many time frames, with different objectives and perspectives; everything is folded into the patterns of market behavior and much of it nets out to noise. Rather than being angry when a market ticks your stop, either accept it as a natural event or, if your stop was placed incorrectly, modify your behavior. If this type of unwanted outcome happens frequently enough that you are this unhappy with it, you are probably doing something that is against the nature of the market. It is a simple choice: continue to deflect and to be angry at the way the market moves, or align yourself with it.

Fight or Flight

The fight-or-flight response is an amazing physiological adaptation. In times of great stress or danger, hormones flood our bloodstream, and our bodies and minds are transformed. Our breathing and heart rate speed up, and blood vessels contract in our extremities so that oxygen is routed to essential areas. This is the response that lets little old ladies lift cars off children or allows soldiers to continue in battle oblivious to grievous wounds. All of this is well known, but what a lot of people do not realize is that the way we perceive outside information also undergoes a profound shift under the fight-or-flight response—our hearing is impaired and our vision actually narrows. Tunnel vision is not just a figure of speech—it is a perceptual reality in response to stress.

In times of physical danger, this response can be a lifesaver, but the problem in modern society is that we have these same fight-or-flight responses to nonphysical stresses. There is only a flood of hormones, but it is not followed by fighting or running. Our bodies transform to prepare for action, but then we sit at our desk and *maybe* squeeze a stress ball if we're really worked up. Nothing in the history of our evolution has prepared us for this situation, and the hormonal flood becomes a constant stress on our systems. Traders experience dramatic emotional swings and the stress of this fight-or-flight response constantly, sometimes several times in a single hour, all through the trading day. The effects of this response on our minds are fairly well known, but the cumulative impact on our bodies is much less well understood. Traders must master their emotions well enough to minimize their exposure to this hormonal barrage that can impair perception, wear on the body, and cause great damage to trading accounts.

Aggression: The Good, the Bad, and the Ugly Most people believe that aggressiveness is a desirable quality for traders, and many outsiders have the impression that trading desks are populated exclusively by Red Bull–pounding, hyperaggressive 20-somethings. There is a grain of truth to this; these types are often attracted to the challenge and perceived glamour of being a trader, but there may be a difference between the kind of people who are initially attracted to the profession and those who survive. Aggression is a legitimate trading skill, but it must be disciplined and controlled.

If you find yourself in a situation where you are on tilt or otherwise out of control, the first step in fixing the problem is recognizing that you are there. This requires a degree of self-awareness than few new traders possess; it is the nature of this state of mind that it

blinds you to everything except your anger and aggression toward the market. If you find yourself in this state, on the edge of losing control, realize that you are now in a very elite group of self-directed traders, the vast majority of whom will never achieve the clarity needed to evaluate their mental state. The first thing you need to do is to stop whatever you are doing; you cannot make good decisions when you are on tilt. Your brain is in a chemically compromised state—you are not in your right mind, and that is not a figure of speech. It is not just that you are making bad decisions; the situation is actually much worse—you *are incapable* of making good decisions in this state because the chemical balance of your body has been altered. As you mature as a trader, you will find yourself here less often, but it is good to have some concrete ideas and actions you can take when you find yourself on tilt:

- Stop trading.
- If you are a short-term trader, immediately exit any position that is showing a loss, and place breakeven or better stops on any other open trades. Even if you are a trader who does not normally place stops in the market, you do now. This is a special situation, and the objective is to remove yourself from the decision process for a period of time.
- Stand up and move around. Take a break, and go for a walk outside. If it is cold, maybe go for a walk without a coat. You don't want to be comfortable; you want to be jarred out of your mental state.
- Exercise. Go to the gym or do something physical.
- Have a non-trading-related conversation with another person. Trading is an isolating experience, even if you are surrounded by other traders. Sometimes we get so stuck inside our heads that a normal two-minute conversation can do wonders. Talk to the clerk at Starbucks. Call your mom. Do whatever it takes to break the cycle.
- Write something with pencil and paper. At least for me, there is some kind of magic in pencil and paper; it is not the same to type on a keyboard. As for what to write, it might be a good idea to write in your trading journal, but even a grocery list will work. Just write.
- Breathe deeply. If you can slow your body down and get control of your physiology, the mind will follow. Meditation can be another powerful tool.
- When you have cooled down and are ready to trade, do one insignificant trade of a very small size. Monitor your psychological reactions to that one trade. If you aren't ready to go back in the game, you will know.
- If you fail the previous test and are still rattled, take a longer break. There may be some cases where you need to take a break lasting weeks or months. If so, do not think about the lost opportunity; focus on the damage you will not do by trading when you are compromised.

These are guidelines, but they have been useful for me and for many of the traders I have worked with over the years. You will find your own list over time, but breaking the destructive cycle before it has a serious effect on your trading account is the key.

COGNITIVE BIASES

This chapter opened with the question "Why is trading so hard?" It seems that it should be easier than it actually is: we acknowledge that markets are extremely random and that there is a very small component of actionable trading signals in market data, but it is there. Why is it not possible to devise simple ways to capture this edge and watch profits accumulate in the trading account? This actually does describe the best high-level trading, but few individual traders ever get to that stage. One of the reasons is that the evolutionary adaptations and heuristics we just discussed result in some consistent cognitive biases. We are practically designed to make trading mistakes. Though these skills do serve useful purposes, unchecked they work just as effectively to ensure our failure as traders. Most traders enter the marketplace with no awareness of the handicaps and weaknesses they bring into the arena, and they are doomed to failure before they even begin. The first step in combating these biases is knowing that they exist and that they will unavoidably color every interaction with the market. A partial list of some of the more common cognitive biases follows.

Gambler's Fallacy

The gambler's fallacy stems from faulty intuition about random processes. After observing deviations in a random process, most people will be inclined to think that future deviations in the *opposite* direction are more likely. For instance, someone betting that a coin would flip heads might be inclined to increase the bet size after a few consecutive tails, or a trader might increase risk on trades after a string of losers. In both cases, they would feel that a win was somehow overdue. At the risk of oversimplifying, most of the problem comes from the fact that runs or streaks are much more common in random data than most people would expect; this single fact is responsible for many of the faulty intuitions we have about randomness.

It is also worth considering that there are cases in which the gambler's fallacy must be modified in market situations. The market is not always a flip of a fair coin. Markets exist in different regimes (e.g., trends or trading ranges, high- or low-volatility conditions, etc.) and certain kinds of trades will have strings of wins or losses in those conditions. It is important to understand the math and the theory, but it is equally important to understand where reality might deviate from those theoretical principles.

Biases Concerning Losses

Consider the following two scenarios. In each, you have a choice between taking the certain payout or loss and playing the game of chance:

1. You are given the choice between a certain $100 win and a 20 percent chance of making $1,000 with an 80 percent chance of winning nothing.
2. You are given the choice between a certain $100 loss and a 20 percent chance of losing (having to pay) $1,000 with an 80 percent chance of losing nothing.

In these cases, it is easy to evaluate the expected values, which tell us which are the correct choices to make probabilistically. In the first game, the winning game, the chance scenario has an expected value of $200 (0.2 × $1,000), which is twice the certain payout. There is no doubt that the correct course of action is to play the game of chance, rather than taking the certain $100. The same math applies for the losing scenario: a certain loss of $100 compared to an expected value of a $200 loss for the game of chance.

Logically, the correct course of action is clear: play the game of chance in the winning scenario instead of taking the certain gain, and take the certain loss in the second scenario. Most people, and even most traders, are inclined to do exactly the opposite in both cases. They will want to lock in the certain gain and will prefer to take their chances on the loss because there is *some* chance that they can avoid the loss altogether. This results in suboptimal decisions with respect to position management and exiting both winners and losers. Many traders will take small wins and will hold on to a loss in the hope that it will come back and they can somehow at least break even. There is good justification for the old adage to "cut your losers and let your winners run," but many traders find this difficult to do in practice.

Another related problem, especially for newer traders, is that many traders find it difficult to calibrate their perception of risk inherent in a stop. Nearly all traders would prefer a small stop on a trade to a wide stop, with the idea that it is better to take a small loss than a big one. If you are properly and consistently sizing positions, there really is no such thing as a low-risk trade; every trade will have a consistent impact on the bottom line regardless of the distance to the stop point, but there certainly are *low-probability* trades. A tight stop may have such a high probability of being hit that it is, for all intents and purposes, a nearly certain loss. Over a large sample size, this is actually a very high-risk stop, even though it might be a loss of only a few pennies at a time.

Overconfidence Bias

Psychological research shows, time and again, that people tend to have an inflated view of their abilities and skills. Most people believe they are better, smarter, and more skilled than average. (Of course, it is impossible for *most* people to be better than the average!) This problem is exacerbated because trading tends to attract competitive, confident people to begin with. Thinking that we are better than we are is a recipe for disaster and is probably one of the reasons why so few traders make it past the learning curve.

There are traders whose hubris extends to every aspect of trading, but the market usually eliminates those traders quickly and efficiently. It is far more common to find traders who believe they have a special skill or affinity for an asset class. Do you just *know* what a certain set of stocks is going to do? Do you have a *special sense* for the relationship between a currency and a commodity? Do you have a *touch* for a certain trade setup? Well, one of the great things about trading is that it is easy to evaluate performance: are you making money? If you have a special skill, the only way it matters is if you are making consistent money over a large sample of trades. There are no excuses. In many cases, traders are much more confident about their trading abilities, about their analytical abilities, and about the epistemological limits of market knowledge than can

possibly be justified by their results. We are never as good as we think we are, and markets are far more random and far less knowable than we wished they were.

Confirmation Bias

Confirmation bias is the tendency to overweight information that reinforces our beliefs and to ignore or downplay information that contradicts. This bias is a key part of keeping many other biases alive. For instance, traders could not be overconfident in their ability with a certain trade setup if they were truly, objectively evaluating their results. However, when they remember two winners and forget about five losers, or come up with reasons why the five losers shouldn't matter, they are engaging in confirmation bias. Record keeping, both of trade results and of research, is critical, because this bias often distorts memory—you simply will not remember contradictory information, or it will be somehow fuzzy and obscured. In most cases, the confirmation bias is not a deliberate attempt to deceive or to manipulate data, but it occurs as a result of the fundamental ways in which we process information.

Anchoring Bias

Anchoring bias is the tendency to place undue weight on one particular piece of information and to ignore everything else. In the case of the overconfident trader, maybe she has made a trade 20 times with 18 losers, but one of the winners was dramatic. It is easy to find your entire perspective colored by a large outlier event, whether it was good or bad. Careful, objective analysis of trade results and pattern studies will guard against this bias. Paradoxically, though it is important for traders to spend time studying the market and its patterns, studying carefully chosen trade examples can actually be counterproductive; too many traders waste time trying to figure out how to reproduce the 1-in-10,000 trade. Do not spend undue time analyzing your big winners or losers; rather, spend time studying the entire set, and understand how those large outcomes fit within the framework of all possible trades.

Recency Bias

Recency bias is the tendency to overweight recent information, or information near the end of a series. Good public speakers know this and structure their speeches around this effect—always end with whatever you want the audience to remember. Good teachers know this when they review key information at the end of a lesson. Traders do not always realize how much they may be swayed by the most recent results of their trading system. There is a potentially nasty interplay between this bias and the tendency of the market to spend time in certain regimes or phases. Imagine a trader trading a good system that just happens to have a large loss due to a market distortion such as a large gap opening. On the next trade, the trader is probably going to be focusing on this loss rather than on the long history of the system. Once again, careful record keeping and broad studies of patterns are important; learn to see each event, regardless of where it falls in the time

line, as only one of many possible outcomes, and avoid attaching too much significance to large events, good or bad, near the end of the series.

Hindsight Bias

"Coulda, woulda, shoulda"—these are the poster children for this bias. When you are evaluating a trade and think you should have seen something or you could have avoided a loss if you had realized a piece of information was significant, be careful. It is far easier to say this after the fact than it is to act on this kind of information in the middle of the trade. This is another reason to avoid putting too much emphasis on the outcome of any one trade. If you spend too much time reviewing large winners or losers, there is a temptation to try to see what you could have done differently as the trade developed.

Illusion of Control

Research has shown that, particularly in stressful and competitive environments, people are unable to distinguish between outcomes due to skill or chance. Langer (1975), who first coined the term *illusion of control*, showed that it was more prevalent in tasks when "skill cues" were present—competitive tasks with clearly defined and familiar outcomes where the individual seems to have the ability to make a choice. In an experimental setting, if you have someone sit and watch a box with randomly flashing numbers and tell them they win when the numbers increase, they are not likely to think their skill has any effect on their results. However, give them a button to push, even if the button does nothing, and their assessment of their skill and its relevance to the task goes through the roof. Casinos know this when they design games of chance; why else would thousands of people push a button or pull a lever attached to a random outcome, and one with a negative expectancy, for hours at a time? For traders, this can be fatal. Many of the other biases are wrapped into one powerful package here—overconfidence, attribution, hindsight, confirmation—and these all reinforce the illusion that traders are really better than they are, and suppress the role that randomness plays in the bottom line.

For traders brave enough to try it, Mauboussin (2010) proposes an interesting solution: can you lose deliberately? At first, you will think the answer is obviously yes, but think deeper. Are you really confident that you could, for an extended period of time, trade *against* your methodology trying to lose, and show results that would be significantly different than what you have achieved trying to win? If you cannot lose deliberately, then whatever wins or losses you are experiencing are merely the result of chance. In short, you are wasting your time. It is better to know you do not know—to know you do not have an edge—than to waste your time and money on a futile exercise.

THE RANDOM REINFORCEMENT PROBLEM

In the rational, sane world, correct actions are met with rewards, and doing the wrong thing results in punishment. This is simple cause and effect, but unfortunately, this is

not the way the market works. Imagine a completely crazy teacher in a classroom, who without any rhyme or reason randomly screams at some students, ignores some, rewards a few, and punishes others. A student could hand in a perfect paper and get a failing grade, sometimes more than once, while a student who puts a big "X" in the middle of a single sheet of paper receives a perfect score for what was supposed to be a 25-page essay. It is not that the teacher is actively punishing the good students; there is no pattern at all to the teacher's actions. Can you imagine trying to learn in such an environment?

This is a problem for traders, because the market is like this teacher; it often rewards incorrect behaviors and punishes perfectly correct actions. You can do exactly the right thing on a trade and lose money several times in a row, or you can make a serious mistake and make a lot of money. The statistical edges in our trading setups become valid only over a large sample size; on any one trial, anything can happen. Especially for developing traders, this random reinforcement, coupled with the extreme emotional charge of both winning and losing, conspire to create one of the most challenging learning environments imaginable.

Random reinforcement is a profoundly powerful tool for behavior modification, and is frequently used to train animals. If you train dogs and reward them every time they obey, their good behavior will probably stop as soon as the rewards stop. On the other hand, if you randomly reward their obedience by sometimes giving a treat and sometimes not, the modifications to their behavior will usually be permanent. (Again, do you see any parallels with slot machines?) It may be counterintuitive, but random reinforcement is actually a much more powerful tool to shape behavior than consistent reinforcement.

There is so much random noise in the market that even excellent trading systems have a large random component in their results. Over a small set of trades, random reinforcement of both good and bad behavior is *normal* for our interactions with the market. Excellent decisions are just about as likely to be met with good results as bad results, and poor decisions will also result in a number of winning trades. Traders trying to be responsive to the feedback of the market and trying to learn from their interactions with the market are likely to be confused, frustrated, and eventually bewildered.

The market's reinforcement is not truly random; over a large number of trades, results do tend to trend toward the expected value, but it certainly can seem random to the struggling trader. The solution should not surprise you by now: evaluate your trading results over a large sample size, and use statistics to separate reality from your emotional perceptions. Learn from 20 or 30 trades, not one. Make decisions about changing your trading rules based on the results from 50 trades, not five. The market is a capricious teacher.

EMOTIONS: THE ENEMY WITHIN

As logical and rational as we try to be, there is no denying it: our decisions are made based on a combination of reason, intuition, and feeling, each in degrees depending on

our personal makeup and the specific situation. Once again, this is a mode of decision making that has great utility in many situations, but it can misfire in the context of trading and markets. Emotions can create stress that unbalances the brain on a chemical level. Emotions can cause us to overweight and underweight certain factors, and sometimes to make decisions without any reasoning at all. Successful traders have many strategies for dealing with their emotions, but that is the common thread—they have all found a way to integrate their emotions into their trading process. Some deny and control them with iron discipline and try to become logical machines, some seek modes of trading that remove emotion from the decision process, and some embrace their emotionality and actually build their trading process around it; but in all cases, they understand their emotional balance and how to control it within the framework of their work flow.

Ego

We all have egos. (I am using the term *ego* here in the colloquial sense to mean self-image rather than in any formal, psychoanalytical context.) Everyone likes to be right, likes to be seen as intelligent, and likes to be a winner. We all hate to lose, and we hate to be wrong; traders, as a group, tend to be more competitive than the average person. These personality traits are part of what allows a trader to face the market every day—a person without exceptional self-confidence would not be able to operate in the market environment. Like so many things, ego is both a strength and a weakness for traders. When it goes awry, things go badly wrong. Excessive ego can lead traders to the point where they are fighting the market, or where they hold a position at a significant loss because they are convinced the market is wrong. It is not possible to make consistent money fighting the market, so ego must be subjugated to the realities of the marketplace.

One of the big problems is that, for most traders, the need to be right is *at least* as strong as the drive to make money—many traders find that the pain of being wrong is greater than the pain of losing money. You often have minutes or seconds to evaluate a market and make a snap decision. You *know* you are making a decision without all the important information, so it would be logical if it were easy to let go of that decision once it was made. For nearly all traders, this is not the case because we become invested in the outcome once risk is involved. Avoiding emotional attachment to trading decisions is a key skill of competent trading, and being able to immediately and unemotionally exit a losing trade is a hallmark of a master trader.

Being wrong is an inescapable part of trading, and, until you reconcile this fact with your innate need to be right, your success will be limited. Earlier in this book, I suggested that an appropriate way to look at normal trading losses is not as losses at all, but simply as a planned, recurring cost of doing business. Though many traders feel shame, anger, and hurt over losing trades, this is illogical—the market is so random that it is absolutely impossible to trade without losing. Many good traders are wrong far more often than they are right; trading is not about being right or predicting the future. All you can do is

to identify places where you might have a small edge in the market, put on the trade, and open yourself to the possible outcomes.

Hope and Fear

Scylla and Charybdis were two sea monsters in Greek mythology situated in a narrow strait so that ships had to pass close to one or the other; captains had to choose because it was not possible for a ship to make the passage and to avoid both. For traders, fear and hope are the twin monsters, and no matter how experienced we may be as traders, we are unable to completely conquer them. What we can and must do, however, is to become aware of our weaknesses and our responses to these emotions. If we can monitor ourselves for susceptibility to errors, we can often intervene before the emotional reaction has resulted in a poor decision.

The reasons for fear are obvious. Most traders are afraid of loss, though this is probably rooted in a misunderstanding. It is wrong to be concerned about or to focus on the normal losses that accrue as part of the trading process, but there is certainly the danger of the unexpected and uncontrollable loss from an outlier event. Recent flash crashes have shown that stable markets can have unprecedented sell-offs; who would have thought that a big blue-chip stock could drop 80 percent in a few minutes? Many traders also face deeper, darker fears that are tied in to questions of self-worth, security, and personal finance. Even for a well-balanced person, trading can be a serious emotional challenge at times.

As powerful as fear is, many traders find that hope is actually more dangerous. Hope encourages us to take potentially reckless risks that we might not otherwise take. It can keep us in winning trades long after the profit potential is gone; many traders give back a lot of open profit because they are clawing for even more. Many traders are also loath to exit their losing trades, sometimes even at their predetermined stop level, because they are *hoping* that the trade will turn around and become a smaller loss. Once again, one of the distinguishing characteristics of successful traders is an ability to cut losers with minimal emotional attachment. No individual trader can succeed without mastering both hope and fear.

After many years and many mistakes fighting these twin monsters, I found a solution that works for me. It is deceptively simple, but it is difficult to do consistently. Here it is: *for every trade you put on, immediately assume you are wrong.* This is your baseline assumption, and, if you find evidence to the contrary (that you are right), be pleasantly surprised. This works because it takes all pressure off you and all hope out of the trade. Normally, once you have made a decision to buy a market, confirmation bias kicks in and you will start to subtly overweight information that supports your position. Instead, think, "I bought it thinking it will go up, but I'm probably wrong." There is no struggle, no fight against the reality of the market, and also no fear because you are *expecting* to be wrong. This is a subtle shift in your thinking, but it can produce a powerful change in your perspective and your behavior.

INTUITION

Intuition is an important part of the trading process for many traders and styles of trading. It is certainly more important to some types of traders than to others, but even highly quantitative work benefits from intuitive leaps at some points in the process. Though there is a lot of misinformation and misconception about intuition, the best working definition might be that it is a way of knowing that falls outside rational thought. Someone who arrives at an answer through reason can usually explain every step—how an answer led to another question, which led to another answer, in an unbroken logical chain. When someone arrives at an answer intuitively, the individual will often say that he or she "just knows" or "feels that it is right," and cannot explain much, if any, of the thought process behind the answer. Intuition works in leaps and bounds. This is not a sign of sloppy reasoning; it is a completely different mode of thought, another way of knowing entirely.

Many developing traders overestimate the importance of intuition, believing that it will cure all of their trading ills. They may think that great traders have a sixth sense that other people do not, that they just trade based on this gut feeling. Some people believe that great traders are born with market sense—either you have it or you don't. Other traders, particularly systematic traders, may believe that intuition does not really exist or that it is unreliable and mostly useful only in hindsight. As usual, all of these viewpoints contain an element of truth, but they are also wrong because they miss some essential points.

Developing Intuition

There is no magic in intuition. Rather, it is a normal problem solving skill that functions on a level outside of consciousness. As such, it cannot be forced, but it *can* be cultivated—there are things you can do to foster the growth and development of intuition. Everyone has had the experience of working very hard on a problem and being unable to solve it during the work session, and then the answer coming spontaneously after a break or a night's sleep. The answer seems to come easily and naturally, with no effort at all, but this is not quite true. The sudden flash of intuition is really the result of a lot of hard work and an extended period of focused effort that activated the cognitive machinery on another level. There are two important elements to building intuition. One is repeated exposure to consistently structured data, which is the focus of much of this book. Equally important, though, is that the work be approached in the right emotional context, which is basically an open, receptive, and almost playful attitude. This is something that is so profound, but is often ignored. Most adults understand the need for hard work and focus, but they are not so in touch with the need for novelty and play. Perhaps this is one reason why children find it easier to acquire new skills, particularly in the artistic/intuitive/right brain domain.

There is a large and growing body of research on neuroplasticity, which says that high-level skill acquisition actually depends on physical changes in the brain—the brain rewires itself to accommodate these new skills. There are structural differences, for instance, between the way a chess grandmaster's brain processes chess patterns and the

way a typical person's brain works. They fundamentally see and think differently because their brains *are* different, and this difference is the result of intense training. This also explains why skill acquisition does not happen overnight: It takes time for the brain to build and reinforce these new structural connections, which requires intense work over a long period of time.

Teachers of high-level skills have known for generations that the correct emotional context and environment facilitate high-level skill development, but they did not realize that students were actually, physically rewiring their brains. Learning should be fun, not only because the student will be motivated to work harder, but because the emotional charge of this enjoyment actually encourages the physical changes needed for skill development. It is very difficult to excel at something unless you love it. This is a real problem for newer traders, for whom the market is an out-of-control emotional roller coaster. Until those emotions are brought under control, it is impossible to approach the market with the correct, receptive mind-set.

Where Does Intuition Come From?

There have been many studies in the social sciences and in psychology that have established the reality of human intuition. Focusing specifically on trading and market-related intuition, Bruguier, Quartz, and Bossaerts (2010) structured a set of experiments designed to "better define what is meant by 'trader intuition,' and to understand why some traders are better than others." They did this by creating a number of scenarios representing markets that both had and did not have trading by informed insiders, with the goal of seeing if novice traders could intuit the intentions of these informed insiders through price movements. Perhaps surprisingly, they found that uninformed traders with no experience in financial markets were quickly able to discern the intentions of these informed insiders, based on nothing more than information contained in price changes themselves.

The logical question, of course, is how did they do that? Bruguier et al. postulated a connection between traders' intuition in market situations and a specific ability known in the literature as theory of mind (ToM). ToM is the human ability (perhaps shared by some other primates) to read benevolence or malevolence through the patterns in one's surroundings—for instance, the ability to read another person's intentions through eye expression or through moves in a strategic game. Since markets with insiders represent an environment that may be deliberately manipulated against the uninformed trader, ToM becomes a potentially relevant skill. Not only did Bruguier et al. find that trader intuition in their market simulations was strongly correlated with tests for broader ToM-based abilities, but it was *specifically uncorrelated* with ability on mathematical or logical tests. Last, they confirmed in brain scans that subjects were activating areas of the brain that have been associated with ToM in previous tests and experiments. It appears that subjects were using highly evolved portions of their brains in new contexts and applications to drive market intuition.

(*Continued*)

This paper is one of many that confirm the reality of intuition, but these results are particularly interesting because they suggest a fairly mundane explanation for the phenomenon. Intuition is not some mystical skill that only supertraders have; it is a retooling and reapplication of normal human abilities built from our social interactions. However, the most important point is that intuition is not special. Even inexperienced, uninformed traders quickly begin to develop intuition about market patterns (a fact that has been confirmed in many other experiments.) If everyone has it, intuition cannot, in itself, be a source of a trading edge.

Using Intuition

A discretionary trader is someone who trades based on a strong understanding of the fundamental principles of price behavior. Many outsiders and developing traders assume that discretionary traders rely on a nearly supernatural sense of what will happen next. In general, this is not true, as most discretionary trades are placed according to more or less clearly defined rules. Good discretionary traders have a passion for understanding how the market really works and for what drives unfolding price movements, and they are also willing to let go of preconceptions and theories immediately if they are disproven by the market. All good discretionary traders are statistics junkies, whether they know it or not. Some are attracted to hard-core statistical methods, but many others spend hours studying charts and keeping records and journals of market behavior. What are they doing if not internalizing the patterns of the market? I would suggest that a rigid analytical framework has the advantage of objectivity and scope, but dedicated traders can accomplish many of the same goals with charts, records of their own trades, and pencil and paper.

Even though much can be quantified, most traders will experience periods of knowing that go beyond the statistics. Sometimes there is a strong gut feeling or emotional reaction associated with a pattern; maybe, for instance, you are considering a trade in three markets and one objectively is less attractive on the chart, but you keep coming back to it for some reason you cannot define. It is also common to experience intuition on a longer time frame. Maybe you have a trade that is working well, but you find yourself thinking about it when the market is closed and you are unduly concerned. In each of these cases, this could well be a message from some part of your mind beyond your conscious grasp. It takes an enormous amount of emotional balance and experience to separate the real messages from the noise; this is one reason why the learning curve for traders is measured in years and not months. New traders simply have too much emotion and too many conflicts to be responsive to the still small voice of intuition or to separate it from their rampant fear and greed.

Trusting Intuition

In general, the most important questions about intuition concern how to balance intuition against reason. There is no simple answer to this; the answer will be different for a trader

at different points in her development, for different markets and market environments, and perhaps even for different kinds of trades. In addition, many traders find it constructive to weight intuition more heavily when considering exits from existing trades rather than entries into new trades. The reason is that most discretionary traders find it easier to read a market when there is a position and fluctuating P&L involved. These factors tend to be powerful cues for intuition, but it is also important to guard against emotional distortions due to fear and greed.

The interplay of emotion and intuition is poorly understood. Intuition often communicates its message through sensations in the body, which is why it is often described as a gut feeling. It is ineffable and ephemeral, and it operates on the margin between thought and feeling. The problem is that emotions essentially communicate on this same channel, and emotions can cloud and distort the message of intuition. It is difficult or impossible for an emotional trader to respond to intuition, which is one reason why new traders should actively ignore any intuitive sense and should instead focus on building a rational analytical framework based on the inherent statistical properties of the market. Once the emotional charge is gone from the trading process, intuition will become more trustworthy, and this will probably also come at a time when the trader has finally been exposed to enough market patterns to have begun to develop some valid intuition.

For most developing traders, the most important points to remember are as follows: Intuition is real, but it is not special. Everyone who has interactions with the market quickly develops some degree of intuition, so the presence of intuition is not a trading edge. There are far more people who have intuitions about the market's movements than there are profitable traders. Also, realize that intuition relies heavily on heuristics, so it is absolutely critical that it be trained correctly. Last, realize that it will often not be possible to walk through logical steps that fully explain your intuitive conclusions. In fact, intuition will be at odds with logic and reason at times, creating a dissonance that the trader will have to resolve. Intuition is fallible and will sometimes be wrong, so it is critical that all intuitive impressions are subject to rational review and evaluation.

Numbers to Leave Numbers

Josh Waitzkin (2008) uses the phrase "numbers to leave numbers" or "form to leave form" to describe his experiences building mastery in both chess and the Chinese martial art *taijiquan*. In both disciplines, students typically spend many years studying fundamentals and basics, focusing on the building blocks of mastery. The chess student may begin by studying endgames where there are only three pieces on the board, and eventually progress to memorizing full games of grandmasters. The novice martial artist spends a lot of time learning to do basic things like standing and shifting weight from one foot to the other.

The journey from fundamentals to mastery is a long one—true mastery does not come until many hours of work have been put in for many years and until fundamentals have been assimilated on an unconscious level. Students may show aptitude early on, but it takes a long time and a lot of hard work in the right environment for even the most talented students to reach their full potential. At the end of this work, intuition grows as a

natural result of everything the trader has done to understand the market. All statistical and quantitative studies, every experience in every trade, and every contemplation of market action are folded into a holistic understanding that is true market intuition.

FLOW

Have you ever been so completely engrossed in an activity that you become lost in it? Maybe you had no sense of time and hours seemed like minutes—you forgot what you were doing, and even the normal, scattered wandering of your mind stopped and you were completely focused on the task at hand. Chances are, whatever you were doing, you did well, even though you might not have been able to explain exactly how you did it. This state of *flow* is a common thread in elite performance, regardless of the context or the field: the professional athlete who sees the whole field at a glance and effortlessly seems to be at the right place at the right time, the professional musician playing an hour-long concerto from memory with effortless perfection, the line cook in a busy kitchen balancing completion of a dozen dishes at a time for hours on end, the video gamer sitting in front of his screen, or the religious mystic sitting on a wooden floor praying for days on end—these experiences are united by a common state of mind. Mihály Csíkszentmihályi (1997) was the first psychologist to seriously investigate this state, though it has certainly been a part of the human experience for millennia. He has identified a few commonalities to the flow experience:

- We are completely focused and completely absorbed in what we are doing.
- There is a sense of great inner clarity.
- The task must have clearly defined goals, so we know what must be done and how much progress we are making toward accomplishing those goals. Feedback is immediate and direct, so that our activity can be readily adjusted to match the task.
- Though the flow experience is connected to complex tasks, we know that our skills are adequate—we are up to the task. There is a sense of easy self-confidence, sufficiency, and no worries.
- There is a loss of our sense of self. We may perceive ourselves becoming one with the task, or even lose sense of the boundaries where our consciousness ends.
- We lose sense of time, and, in some cases, have a feeling of standing outside of time. This, together with the loss of self, sometimes is described as an expansion of consciousness.
- It feels great. Actually, that is a dramatic understatement. Many people report the flow experience as being one of sheer ecstasy. There is an ineffability to the state; many times we are simply unable to find words to convey the experience and it defies all explanation.
- Because of this, activities that produce flow become their own intrinsic motivation. We are driven to excel in these activities simply to achieve the state of flow—flow becomes its own reward.

How to Get There

In the flow state, we are supremely competent. Someone observing our performance would remark that we make a complex task appear effortless and easy; this, in fact, is one of the attributes of true mastery in many disciplines. Elite performers do their best work in the flow state, so it is worth our time to consider the nature of this state, how to get there, and how to guard against events that could jeopardize the flow experience. To this end, Csíkszentmihályi, Abuhamdeh, and Nakamura (2005) identified three key conditions that must exist before flow is possible. (I have added a fourth condition based on my own experience.) The presence of these conditions does not guarantee that flow will be achieved, but, without them, it is not possible.

1. The activity must have clearly defined objectives and goals.
2. The task must offer clear and immediate feedback.
3. The performer must have confidence that his or her skills are matched to the task.
4. The experience rests on a set of foundational skills that are assimilated below the level of conscious thought.

Performance in any complex task contains a great degree of variation, even though this may not be apparent to an outside observer. For the athlete, changing humidity, lighting, or other environmental conditions will play a part in performance. An artist may encounter materials that have slightly different properties due to temperature or composition. Peak performance does not proceed in an unerringly straight line; there is no perfection, even though it may appear so to the outside observer. Constant and subtle adjustments have to be made. Good performers in the flow state make these adjustments easily and naturally—this is possible only because the task offers a constant stream of feedback.

Outside stress can jeopardize the flow experience. Performers in the flow state must be confident that they can handle whatever challenges the experience will throw their way. Figure 11.1 shows a chart adapted from Csíkszentmihályi's *Finding Flow* (1997) that considers performers' state of mind at the intersection of their skills and the challenges of the task. In the lower left quadrant, skills and demands are low, and the performer simply does not care about the task. This is the plight of an office worker who might describe the job as trivial and meaningless. If challenges increase without a commensurate increase in skills and abilities (moving along the vertical axis of the chart), the performers' stress increases as they realize that they are facing a task for which they are ill-suited, and that, at some point, they will be unable to accomplish it. If skills increase far beyond the challenges present, results may suffer as the performer could actually be too relaxed and comfortable. Interesting things start to happen when extremely high challenges are met with correspondingly high skills; it is here that the performer starts to have the potential to slip into the flow experience.

In my experience, peak performance, the kind of performance that facilitates flow, rests on a strong foundation of completely assimilated skills. The artist has held a brush

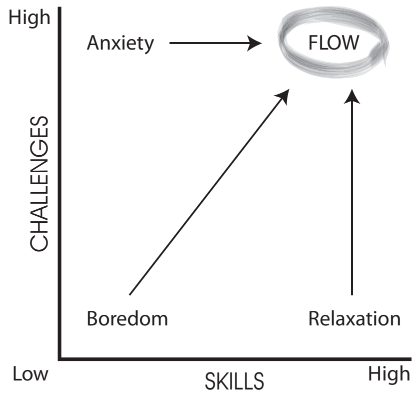

FIGURE 11.1 Csíkszentmihályi's Performer State as a Function of Challenges and Skills
Source: Adapted from Mihály Csíkszentmihályi, *Finding Flow* (New York: HarperCollins, 1997).

tens of thousands of times and understands the complexities of paper, paint, and moisture; he has mastered brushstrokes and color to the point where they are tools that he can draw upon without conscious thought. The master musician has assimilated the technical requirements of her instrument through tens of thousands of practice sessions spread over many years. The expert rock climber seems to have a sixth sense, drawing on a deep understanding of torque, kinesthetics, and the properties of different types of rock that comes only from long experience. The trader has seen enough market action and has done enough statistical studies to know what usually happens when a market closes very strongly three days in a row, with a wider range the third day. There is nothing remarkable about any of these skills taken individually, but their deep assimilation into a whole that seems to be greater than the sum of the parts is one of the hallmarks of mastery.

Figure 11.1 also shows why the flow experience can act as a powerful guide for learning and skill development. Being in the flow state is highly desirable; it feels good and we perform well in this state. Being in that space becomes its own intrinsic motivation and we will naturally do whatever is necessary to return to the flow state when we are pushed out of it. Imagine that you are in the area of the graph where your high skills are meeting moderately high challenges, but not sufficient challenges to fully absorb your attention. In this case, the performer can get back to the flow state by adding challenges and increasing the complexity of the task. Similarly, if the performer is in the space where high challenges are met by skills that might not quite be up to the task, increasing the level of those skills will move the performer back into the potential flow zone. It takes energy, attention, and focus to achieve this flow state, but its presence can be a powerful clue that the performer is in an optimal state to learn, to grow, and to develop new skills.

The Role of Attention and Focus

In the normal world, our minds are usually scattered. It is not unusual to be doing a task and to be thinking about several other things; in fact, multitasking is considered an asset

in many professions. The problem is that we have only so much mental bandwidth, and it is hard to draw a line between multitasking and being distracted. There is the risk that when we focus on many things at the same time we will do many things, but do nothing well. Part of the beauty of flow is that we are completely focused when in this state. In fact, one of the mechanisms that have been proposed to explain the flow state is that it occurs when all available cognitive capacity is focused on one single point, a most unusual state of mind in our daily lives.

This state is not unfamiliar to meditators and religious aspirants. Many of the world's religions include a practice of repeating a mantra, a short phrase or prayer, over and over until it completely fills the field of awareness and much of the conscious mind shuts off. Mystics have reported that this is one route to achieving enlightenment and that a sense of religious ecstasy often accompanies this practice after many hours or days of this kind of focus. In the East, elaborate mandalas were created as aids to meditation. By focusing visual attention on one part of the image, the meditator was again able to enter into a state of higher consciousness. In yet another example, many meditative techniques revolve around ideas like focusing attention on a part of the body or on the breath as it goes in and out of the body; again, this is designed to achieve a single-point focus of attention.

One of the prerequisites for achieving flow is absence of distraction and complete focus on the task at hand. Whether this is evening chart review or screen time during the day, structure your environment to minimize distractions. Turn off the television, avoid Internet chats, do not check e-mail, and sequester yourself physically. It is important to do all of this with the right mind-set. Flow cannot be forced. You cannot try harder and work competitively to achieve the flow state. In fact, it flourishes in an almost playful environment of open-minded wonder, so it is not by chance that this is also the environment that is most conducive to learning and skill development. When we are in the state of flow, we are at our best, and our trading becomes something greater than the sum of the individual skills and parts.

PRACTICAL PSYCHOLOGY

Much has been written, here and elsewhere, about the psychological issues traders face and the right mind-set with which to approach trading problems. This is a complex subject because traders at different stages in their development will have significantly different challenges and needs. Different personalities will deal with the stresses of trading in significantly different ways, so solutions that might have relevance for one trader might fall well short for another—it is dangerous to make sweeping generalizations.

Psychological work is no substitute for actually having an edge, and proper psychology is not an edge in itself. No matter how hard you try, how much you focus, or how much you practice, you are not going to be able to flip a fair coin and make it come up heads more than about half the time, which is essentially what many new traders do.

Many new traders are trading methods and ideas in the market that do not have an edge and, rather than rectifying the real problem, they focus on the performance insights of trading psychology. Much of the time new traders spend on psychology would be better spent understanding the true nature of the market's movements.

For developing traders though, the situation is different. Once you have a method that has an edge in the market, it is impossible to apply that edge without having the proper mind-set and attitude. Traders find themselves making many strange mistakes that compromise their results, and these are often due to psychological issues. Dealing with the psychological stresses of trading is one of the core skills of competent discretionary trading, and it is something that requires ongoing maintenance throughout a career. No one is ever immune to psychologically driven errors. For more experienced and developing traders, it does make sense to focus on this area, perhaps even seeking the help of a qualified professional in the field.

Most of the suggestions that follow are for the self-directed trader working alone or in a team and, ideally, with a mentor. For institutional traders, portfolio managers, and quantitative system designers, your situation may be different. You will still be inclined to make these same errors, but the constraints of your job or the institutional framework may define your role well enough that your behavior is restricted. You may still find insight in understanding the issues self-directed traders face, because these reflect the psychology of the market and price movements at important inflection points.

Develop an Approach That Fits Your Personality

Who are you? It has been said that if you don't know the answer to this question, the markets are an expensive place to find out. This is true, and many millions of dollars and years of people's lives have been wasted because they were trying to trade methods or markets that were a poor fit for their psychological makeup. One of the secrets to managing yourself psychologically is to pick a trading style that plays to your strengths. So, once again, who are you? Some people make decisions intuitively and quickly, while others tend to prefer long debate and a careful weighing of all relevant factors. Some traders are naturally inclined to be more aggressive and active, while others prefer a more sedate pace. Some developing traders have serious constraints on their time and are not able to monitor markets intraday, whereas others can sit at the screen every minute the market is open. Some traders may have backgrounds and experiences that make certain markets more interesting or attractive to them. For instance, a trader who grew up on a farm will probably have natural inclinations toward agricultural markets that might be alien to a trader with a strong background in accounting and corporate finance. Every piece of their trading methodology and trading plan must be shaped by who the trader is.

Choose a Market The choice of which markets to study and trade is an important one. Many retail traders are drawn to foreign exchange, but this is probably because of the extremely low account balances required to open a forex account. This is also

unfortunate because the forex markets tend to be the most random and least predictable of all the major markets in many time frames—it is difficult to derive a quantifiable short-term edge in the currency market. One reason might be that a lot of the activity in the forex markets is driven by a complex web of factors and much of the activity in these markets is secondary.

Futures are also problematic for many new traders, because even with mini contracts, considerable risk capital is needed to navigate these markets. A stock trader might be able to start trading and, using odd lots (odd lots are less than 100-share lots), might be able to limit her entire risk to $10,000, risking perhaps $50 on a trade. It takes a long time to lose $10,000 in $50 increments, which is exactly how the beginner should be thinking. For most futures traders, $50,000 is probably a realistic initial risk to allocate to their learning period. Many traders are drawn to stocks because they come from investing backgrounds and owning stock is intuitive, but these traders are at a disadvantage because *shorting* stocks also needs to quickly become intuitive.

Choose a Time Frame The primary question here is do you want to *day trade*, swing trade, or invest for the long haul? Details of whether you want to use 10- or 15-minute bars are considerably less important than this big-picture time frame decision. There are advantages to day trading, especially for the new trader. A swing trader might see a few hundred patterns in a year, but a day trader will see hundreds in a single week. The immersion and focus on pattern assimilation can result in a greatly accelerated learning curve, provided the trader can enter into the right psychological state to take advantage of the opportunity. In addition, the more times you apply a statistical edge, the more consistent and larger your profits will be; no other time frame offers as many "at bats" as day trading does.

However, the costs and challenges of day trading are severe; the impact of transaction costs alone presents an insurmountable barrier for many traders. For instance, imagine a trader with a $250,000 account who does 10 trades a day and who likes to trade stocks in the $150 to $200 range that might have, on average, $0.05 spreads. Furthermore, assume this trader pays $0.001 commission per share and no exchange or electronic communication network (ECN) fees on balance. (These are extremely favorable assumptions.) Last, assume the trader consistently bids or offers for his exits and enters trades with market orders, so he is paying the spread on 50 percent of the shares he trades. If he does 10 trades a day on 1,000 shares, transaction costs will total $502 a day, meaning that he has to make about $126,000 a year *just to cover costs*. This is a 50 percent annual return, again, just to break even. To put that in perspective, the Renaissance Technologies Medallion Fund, widely considered to be the best of the best, has averaged an annual return just under 40 percent since its inception; traders and funds that can make 25 percent a year are rock stars in this industry. This is a tremendous vig for the new trader, so consider this carefully.

The other issue with day trading is that the psychological demands are extreme. Day traders ride the complete emotional roller coaster from euphoria to despair, usually several times in a single trading day. Unless you have the emotional control of a Buddhist

monk, day trading will play on every psychological weakness you have, and you will frequently find yourself under a degree of stress that challenges the open receptiveness needed for optimal learning. I am not saying that no one should day trade, but you need to be aware of the costs and challenges of this type of trading.

On the opposite end of the spectrum are *long-term investors* who intend to hold positions for years. For many of these players, a month is a short time frame and they consider anything on the weekly chart to be pure noise. At this level, infrequent trading and position adjustment become barriers to the trader who needs to assimilate patterns and to learn to make decisions. It is not that technical patterns do not work in the long term. The balance of mean reversion and range expansion is a little different in some time frames, but technical tools retain their validity even at long time horizons. The problem for the long-term investor is that you will not get to see them work very often and it is difficult to build intuition about the market's movements if you are making only a few decisions a year.

In the middle of the spectrum are the swing traders. Properly, the term *swing trading* does not define a specific time frame, but rather a specific style of trading—looking to target and to profit from one specific swing in the market, usually the next one, while tolerating as little pain as possible. A swing trader will attempt to position long as the market turns into an uptrend, and will usually not be interested in sitting through retracements in that trend. Some swing traders may aim for holding periods of two days to two weeks, while others may look to hold for two weeks to three months, and still others may focus on swing trading hourly charts with holding periods ranging from a few hours to two days. For many traders, the swing trading approach in an intermediate time frame of several days to several weeks offers an excellent balance: Trading is frequent enough that learning takes place quickly, and most analysis can be done outside of market hours, minimizing the decisions that must be made under pressure. This has the dual advantage of allowing the trader to enter into an open, receptive state, while also allowing time for deep reflection and analysis of the patterns being considered.

Choose a Style Though there are a thousand subtleties to a trading style, and every successful trader creates a style that fits some key elements of his or her personality, there are two key questions to consider: are you a trend follower or countertrend trader, and do you want to be a scalper or hold for bigger moves? It is impossible for a new trader to answer these questions without some exposure to markets and to the actual trading process; the answer may change for a trader at different points in a career, but finding the answers to these questions is a key part of knowing who you are as a trader.

As a group, most traders have strong personalities, are opinionated, and are contrary to the extreme. As a result, they also tend to be distrustful of consensus and groupthink, and most traders find that fading (going against) moves comes more naturally than following the trend. In addition, there is a tendency to regard markets that have made large, sudden moves as being mispriced, either on sale or ridiculously overpriced. However, traders who would focus exclusively on fading moves need to deal with an important issue: with-trend trades are usually easier and offer better expected value than

countertrend setups. The most effective fade traders lie in wait until markets reach ridiculous emotional extremes on the time frame they are trading, and then they pounce. This requires extreme patience, discipline, and maturity. If you go into the market constantly looking for opportunities to fade, you will find them, but you will often be steamrollered as markets simply keep going. The crowd may be dumb, but they are often right and trends can go much further than anyone would expect.

There are advantages to trend following: with-trend trades tend to be less transactionally oriented, and it is possible for a single successful trend trade to make many multiples of the amount risked on that trade. However, trend traders will accumulate many small losses while they work to find the one market that will trend. It certainly is a viable strategy, but it is not the answer for all traders. There are strong statistical tendencies for mean reversion, and traders working a disciplined approach to fade trades may find that they can achieve higher returns and more effective deployment of capital, albeit at the expense of much harder work and many more transactions.

Scalping refers to a style of trading that focuses on a large number of very small trades. We usually think of this on very short time frames, but it is also possible to scalp on a daily or higher time frame; the key is simply that the expected profit or loss is a very small percentage of the average-sized move on that time frame. Scalpers are exposed to very high transaction costs, and are rarely involved for the big swing. Scalpers may take five cents out of an intraday swing that moves two or three points. So, why scalp? The best answer is that some people and some personality types are good at scalping, and it can offer these people consistent profits. If you believe you want to be a scalper, realize that these edges have been significantly eroded in recent years by more efficient market microstructure, and the game could well be completely over for the human trader within the next decade. Many traders choose to scalp because they lack the discipline to wait for actual trade setups—but this is not a good reason to scalp. If you choose to scalp, do so because it is the right answer for your personality, not because you are undisciplined and impatient.

Let me share my personal perspective on these questions: the best answer for most traders is to reach some kind of middle ground. Though traders should focus on a handful of patterns to trade, especially at first, it is probably best if some of those patterns are with-trend and some are countertrend. If you have only one set of tools, you will tend to force every market pattern into the context of that set of tools. If you trade only countertrend trades, you will always be looking for places to fade. If you trade only with the trend, you will ignore the spots when trends might be overextended and will always be focused only on finding the next spot to enter with the trend. In other words, if the only tool you have is a hammer, every problem you encounter will look like a nail!

Discretionary or Systematic? The choice between *discretionary trading* and *systematic trading* is also important. This book has been written for the discretionary trader, but some traders may discover they are more suited for a systematic approach. They may find that they are not good at handling the stress of making decisions under pressure and that they function better in an analytical context far removed from the heat

of battle. These traders are not doomed to failure, and they could be well-equipped to do quantitative system development. Some traders also find success with a hybrid approach, utilizing a trading system and making intuitive interventions in that system's decisions at critical points. A word of warning is in order here: If you are going to do this, carefully monitor your hybrid results and compare them to the raw system results to be sure that you are actually adding something of value. Many traders who do this intervene based on their emotional reactions to risk, and their actions are rarely constructive. Another point (which would seem to be obvious) is that your system must actually *work* and must actually show a profit after all costs are considered. If your system does not show a solid track record in properly done backtests and forward tests, it probably will not work in the market.

Also, if you choose to be a discretionary trader, carefully consider why you made that choice. Many discretionary traders avoid the systematic route because of laziness or because they lack the quantitative skills to really understand system development. This is a mistake. Discretionary trading is probably the *hardest* trading there is; it takes more work, more time, more analysis, more self-reflection, and more self-control to achieve success in this arena than in any other type of trading. In addition, if you are a discretionary trader, *you* are the most important element of your system. Any outside stress—whether it be illness, financial problems, relationship problems, sickness, or injury—that compromises your emotional balance can seriously jeopardize your trading results. Good discretionary traders who find success over the long haul develop a system to monitor themselves and their emotional state, and usually reduce their risk at times when they are not at their peak performance level.

SUMMARY

Though I have made this point repeatedly throughout this book, it bears repeating here: one of the most important keys to successful trading is consistency. Consistency applies to your actions and interactions with the market, but also to seemingly mundane points like your daily schedule, record keeping, analysis of your results, and review of your journals. Good trading is, to a large degree, boring and predictable. This is another key reason that many traders fail: they are drawn to the markets and to trading by what they perceive as a challenging, glamorous adventure, and are unable to make the adjustment when confronted with the reality of competent trading, which is very different. If you are seeking excitement in the market, you will find it. Trade too much risk on one trade, take reckless entries, skip a few days' review of your positions, put on large size before an impending economic report—any of these things will generate an exciting outcome, but probably not a good one. Creating excitement is often at odds with creating profits; good traders strive for consistency first and foremost.

Consistency is important from at least two perspectives. First, it is not possible to evaluate the efficacy of any trading system or rule set if you are not applying it with

perfect consistency and discipline. Imagine that you have a trading system that is performing poorly but you are also trading it inconsistently; the bottom-line results are a combination of both the system's actual performance and your own inconsistent application of that system. It would be extremely illogical to make adjustments to the system rules based on this performance, but this is an error many developing traders make. The market is such a random environment that your first task should be to remove degrees of freedom affecting your results. If you are a self-directed trader, this should be the focus of your early development: remove degrees of freedom whenever possible. If you are an institutional trader, the confines of your job description will take care of this mandate, which is one reason that traders in clearly defined roles develop competence much faster than most self-directed traders. Second, for traders in both roles, consistency in your planned study times, review, and even specific screen setups will foster the rapid assimilation of market patterns on a deep level, quickly leading to the growth of real market sense and flow.